code

User Manual

Code Reader 3.0™

Manual Version 15

Release Date: 3/24/09

This version of the manual released with firmware version 4058.

C002332_15_CR3_User_Manual

Statement of Agency Compliance

The CR3 has been tested for compliance with FCC regulations and was found to be compliant with all applicable FCC Rules and Regulations.

IMPORTANT NOTE: To comply with FCC RF exposure compliance requirements, this device must not be co-located or operate in conjunction with any other antenna or transmitter.

CAUTION: Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

The CR3 has been tested for compliance to CE standards and guidelines and was found to conform to applicable CE standards, specifically the EMC requirements EN 55024, ESD EN 61000-4-2, Radiated RF Immunity EN 61000-4-3, ENV 50204, EFT EN 61000-4-4, Conducted RF Immunity EN 61000-4-6, EN 55022, Class B Radiated Emissions, and Class B Conducted Emissions.

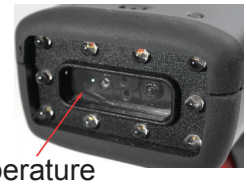
The CR3 can be set to use targeting lasers. The CR3's targeting laser emits Class 2M radiation outside of the product per IEC 60825-1. Class 2M Laser/LED product. Do not stare into beam or view directly with optical instruments.

The CR3 has been tested by an independent electromagnetic compatibility laboratory in accordance with the applicable specifications and instructions.

c UL us 37AW LISTED E300884

Laser/LED Radiation

Wavelength:	<1mW
Maximum Output:	650-700 nm
Laser Pulse Duration:	0.977 mSec.
LED Pulse Duration:	0.255 uSec.



Laser aperature

Enlarged for readability

A Warning Label (see left) is located on the underside of the CR3 near the battery locking mechanism as pictured (see right).

Code voids product warranty if the hard case has been opened or tampered with in any way. Opening the case may put the user at risk of laser radiation exposure (Class 3R). A second Warning Label (see left) is placed within the casing structure as pictured (see right).

CAUTION - CLASS 3R LASER RADIATION WHEN OPEN AVOID DIRECT EYE EXPOSURE

Enlarged for readability

Caution – Use of controls or adjustments, or performance of procedures other than those specified herein may result in hazardous radiation exposure.

In addition, a CB Test Certificate has been issued by the National Certification Board (NCB) indicating Code Reader 3.0 (CR3) meets all safety and quality standards in accordance to IEC 60950-1:2001, First Edition.

Code Reader 3.0 User Manual

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The Code Reader software uses the Mozilla SpiderMonkey JavaScript engine, which is distributed under the terms of the Mozilla Public License Version 1.1. Source code for this version of Spider Monkey is available at: **http://www.codecorp.com/source/spidermonkey.**

The Code Reader software is based in part on the work of the Independent JPEG Group.

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www.codecorp.com

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Chapter 1 - Getting Started

1.1 - Introduction

CR3 is a revolutionary bar code and 2-dimensional code reader. Developed to be the first universal reader, no other single device performs as many functions. With a cost of ownership far less than comparable systems, the CR3 incorporates a unique dual path optical system, a 1.3 million pixel CMOS sensor, and a 400 MHz processor. This combination has created a reading system that supports:

- **High density matrix codes and larger low density linear codes**
- **Superior working range**
- **High-speed omni-directional decoding**
- **Cordless and cabled interfaces**
- **Unsurpassed data read rates**

The CR3 sets a new benchmark for size and weight. It is smaller and lighter than comparable systems yet can withstand multiple drops to concrete. It is the only product available in batch, cabled or wireless formats; handlheld, ruggedized cabled or battery handle use-case scenarios; and lanyard hook attachment or reader stand form factors. The cordless version utilizes the latest Bluetooth™ class 1 radio with a 300 foot operating range. The CR3 is rugged and lightweight and the cordless version will operate for more than a complete shift at the highest use rate. The CR3 performs more than 11,000 reads and transmits from a single battery charge. The CR3 will automatically discriminate between all major 2-D matrix and linear bar code symbologies and features a timestamp feature for logging data.

Whether you need a small, palm-held device or a traditional gun, CR3 was specifically developed
so users may easily choose the device that best meets their needs. The CR3 is available in three basic configurations:

1. **CR3 Cabled** - USB, RS-232 or PS/2 interfaces
2. **CR3 Batch** - Store and forward device with memory and long-life battery
3. **CR3 Cordless** - Long life battery and Bluetooth radio

1.2 - Unpacking

Remove the imager from its packing and inspect it for damage. If the scanner was damaged during shipping, please call Code at (801) 495-2200.

The standard CR3 unit is shipped with a USB cable interface. The unit also features a battery blank which must be installed when using the reader (except when attached to the H2, BH1 or BH2 handle).

Various accessories are available for the CR3.

- 4 cable options (USB 6ft., USB 12 ft., RS-232 or PS/2)
- 1950 mAH long-life Lithium-Ion battery
- Class 1 Bluetooth radio with 300 foot operating range (shorter ranges available)
- Clip-on pistol grip handle
- Ruggedized Cabled Handle
- Battery Handle (in two battery sizes)
- External single-bay charger
- CodeXML Bluetooth modem
- Protective Elastomer Boot
- Protective Case Cover or Holster
- Power Supplies: US/Europe/SA/UK/Asia
- Reader Stand
- Lanyard Hook attachment option

Please keep your packing materials. The CR3 is shipped in an approved shipping container and should be used if you ever need to return your equipment for servicing.

1.3 - Reader Battery Installation

Attaching and Detaching the Lithium Ion Battery

The CR3 has an option to include a 1950 mAH Lithium Ion battery. To install battery, make sure the battery is in the correct position (figure 1.1). Place the plastic tab of the battery into the reader (figure 1.2). Push the battery in and slide the locking mechanism down (figures 1.3)

Charging the Lithium Ion Battery

The battery automatically charges everytime a USB or Powered RS-232 cable interface is attached to the unit and the host is powered up.

Note: The RS-232 interface power adapter must be plugged into a wall socket for the unit to charge.

If you power-up the CR3 with a completely discharged battery it will take up to 10 minutes before the unit will become operational.

Figure 1.1

Figure 1.2

Figure 1.3

1.4 - Attaching Handles

H1 - Handle

1. Place the CR3 in the cradle of the handle and slide the unit back (Figure 1.4).
   Be careful not to place fingerprints on the front glass when attaching handle.
2. Once the 8-pin DIN connector of the handle begins to enter the opening in the back of the unit, firmly press the unit back until the unit is flush against the handle (Figure 1.5).

Figure 1.4

Figure 1.5

H2 - Ruggedized Cabled Handle

1. Make sure the reader has no battery or battery blank installed.
2. Insert the reader's 8-pin DIN connector into the flexable connector at the back of the H2 handle (Figure 1.6).
3. The reader 'snaps' onto the H2 handle utilizing the battery compartment.
4. The reader can be further secured to the handle with two threaded screws through the flexible connector and two more threaded screws on the underside of the reader and handle (Figure 1.7).

BH1 or BH2 Battery Handle

1. Make sure the reader has no battery or battery blank installed.
2. Insert the tab on the back of the BH1 or BH2 Handle into the reader's recessed slot typically utilized to secure the battery in place on the reader (Figure 1.8).
3. The reader 'snaps' to the handle utilizing the battery compartment (Figure 1.6). The reader will 'quick release' from the handle to accommodate quick and easy battery charging.
4. Optionally, the reader can be further secured to the handle with two threaded screws on the underside of the reader and handle (Figure 1.7).

Figure 1.6

Figure 1.7

Figure 1.8

1.5 - Powering On/Off Reader

To power on the reader, press and hold either of the red trigger buttons for one second (Figure 1.9).

The reader will power down after 2 hours of non-use. To change the default settings, please see Section 4.6 - Reader Power Off Settings.

Figure 1.9

Save Settings

M188_02

1.6 - Keypad/Icon Overview

The chart below shows key/button functions.

	Description of Button Function			
Key	**Numeric Mode**	**Upper Case Text Mode**	**Lower Case Text Mode**	**Symbol Mode**
SHIFT	Toggles between numeric characters, upper case text, lower case text, and symbol character input	Toggles between numeric characters, upper case text, lower case text, and symbol character input	Toggles between numeric characters, upper case text, lower case text, and symbol character input	Toggles between numeric characters, upper case text, lower case text, and symbol character input
1 space	1	Space, 1	Space, 1	Space) < _
2 ABC	2	A, B, C, 2	a, b, c, 2	! * = `
3 DEF	3	D, E, F, 3	d, e, f, 3	“ + > {
4 GHI	4	G, H, I, 4	g, h, i, 4	# , ? |
5 JKL	5	J, K, L, 5	j, k, l, 5	$ - @ }
6 MNO	6	M, N, O, 6	m, n, o, 6	% . [~
7 PQRS	7	P, Q, R, S, 7	p, q, r, s, 7	& / \ Space
8 TUV	8	T, U, V, 8	t, u, v, 8	‘ :] Space
9 WXYZ	9	W, X, Y, Z, 9	w, x, y, z, 9	(; ^ Space
0	0	0	0	Toggles between 4 sets of symbols – when pressed, the current symbol set is displayed
CLEAR	Backspace and clear messages	Backspace and clear messages	Backspace and clear messages	Backspace and clear messages

Note: All characters represented in this table are for ASCII mode.

The chart below shows all of the icons for CodeViewer™ software and their definitions.

Icon	Description
Power Icons	
	50% to 100% capacity of battery
	20% to 50% capacity of battery
	0% to 20% capacity of battery – recharge battery as soon as possible
	Battery is recharging
	No icon is displayed when battery blank is used with a cabled reader
Connection Icon	
	Reader is connected physically or wirelessly to a receiving device (computer, handheld, etc.) Note: Some RS232 configurations can not be detected
	No icon is displayed when the reader does not detect a connection
Communication Mode Icons	
	RS232 communication mode enabled
	PS2 communication mode enabled
	USB communication mode enabled
	Bluetooth communication mode enabled
Packet Mode Icons	
	One way mode – no acknowledgement required
	Two way mode – packetized, bidirectional communication between a CR3 and an application (may also indicate download mode)
	Downloader mode
	Keyboard mode – can be used as either USB keyboard or PS/2 keyboard input mode
	Virtual COM Port One Way mode
	Secure mode – data encryption mode enabled
Memory Icons	
	No stored data
	Some stored data
	Memory is at least 90% full
	No batch mode – data will not be stored in the reader's memory if not connected
Input Mode Icons	
	Caps Lock – data entered manually on the keypad will be in capital letters
	Lower Case – data entered manually on the keypad will be in lower case letters
	Numeric – data entered manually on the keypad will be numeric
	Symbol – data entered manually on the keypad will be symbols
	Locked – buttons pushed on the reader's keypad will be ignored

1.7 - Batch Operation

1.7.1 - Introduction

The CR3 unit features a batch mode for applications requiring a portable reader. Batch mode allows a user to store scanned data to the reader's non-volatile memory. The user may transfer the data to a host computer when needed. To utilize batch functionality you will need to purchase the 1950 mAH Lithium Ion battery from a Code representative.

The CR3 may be programmed to operate in three different batch modes:

1. *Send & Buffer Mode (Default)* - In Send and Buffer Mode, the CR3 unit will automatically detect when the USB or RS-232 cable is detached, or the Bluetooth® radio is out of range, and will switch into batch mode and buffer the data in non-volatile memory. When the reader is reconnected to your host computer, or when the Bluetooth Radio is back in range, the reader will auto transfer the buffered data. Once transferred, the data is automatically erased from the reader's memory.

   Note: Once a unit is reattached to a cable or enters within radio range, any data scanned WILL NOT be saved to the non-volatile memory. For RS-232, a power supply connection is used to detect when a reader is attached to a host computer.

2. *Log Only Mode* - In Log Only Mode, the reader will only store data into non-volatile memory. You can only retrieve the data by scanning the Transfer All Stored Data in Memory code (see explanation next page). Once the reader's memory has been transferred to a host computer, all of the data will still reside in memory. A user must scan the Delete Scanned Data from Memory code to clear memory.

3. *Send & Log Mode* - In Send and Log Mode the reader will save a copy in non-volatile memory as well as send the data if the reader is connected. The data can be retrieved by scanning the Transfer All Stored Data in Memory code or the Transfer Only Unsent Data in Memory code (see explanations next page). Once the reader's memory has been transferred to a host computer, all of the data will still reside in memory. A user must scan the Delete Scanned Data from Memory code to clear memory.

   Note: The reader can be defined as connected if:

   1) The Bluetooth radio is in range;
   2) The USB cable is attached to a host and the reader is enumerated;
   3) The reader is in RS-232 Cabled - No Power mode; or
   4) The RS-232 cable is attached to host with power supply and the reader is in RS-232 Batch-Cable Detect (Default) mode.

The CR3's dedicated batch memory is a minimum of 1MB. To determine the number of reads that may be stored, divide the average bytes of a scan into the total minimum memory.

Feedback

After a successful decode in batch mode, the unit will beep once and the memory LED will flash either red or amber depending on memory level, and every 15 seconds the battery LED will flash green, amber or red depending on the battery level. This feedback behavior is accurate when a reader is cabled or uncabled.

Transferring and Deleting Data

There are three different codes to transfer and delete data in memory.

1. *Transfer All Data in Memory* **-** This code will send all data in memory everytime the code is scanned.

2. *Transfer Only Unsent Data in Memory* **-** This code will send only the data in memory that hasn't already been sent when the code is scanned (ONLY works in Send & Buffer and Send & Log modes).

3. *Delete Scanned Data from Memory* **-** Scanning this code will erase all data in the reader's non-volatile memory.

Auto Transfer Buffer Memory

By default, when reconnected, the CR3 will automatically transfer any data in memory once a connection to a host is established. If your application is not ready, the reader will send the data anyway and the data could be lost. If you do not wish for the reader to immediately send data upon connection, please scan the Disable Auto Transfer Buffer Memory code.

Send & Buffer Mode (Default)

M075_01

Log Only Mode

M072_01

Send & Log Mode

M076_01

Transfer All Data in Memory

M077_02

Transfer Only Unsent Data in Memory

M078_02

Delete Scanned Data from Memory

M071_01

Enable Auto Transfer Buffer Memory (Default)

M070_01

Disable Auto Transfer Buffer Memory

M069_01

RS-232 Considerations

In RS-233 Cabled-No Power mode, the CR3 will behave as if it is always connected even though the serial cable is disconnected or the power adapter is unplugged. Data scanned will be sent, regardless of connection status. Data scanned in Cabled-No Power mode will be lost if the CR3 is not connected to the serial cable - it will not buffer the data, unless Send & Log or Log Only mode has been enabled.

In RS-232 Batch-Cable Detect (Default) mode, the CR3 will detect if it is connected to a powered serial cable, if it is , it will then send the data. If a powered serial cable is not connected or if the power adapter is not connected to the serial cable, the CR3 will buffer the data. When the CR3 is then connected to a powered serial cable, the data will automatically upload.

RS-232 Batch-Cable Detect (Default)

M073_02

RS-232 Cabled-No Power

M074_02

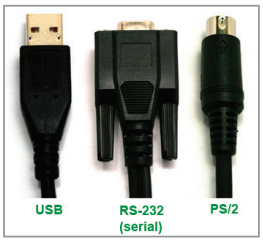
Save Settings

M188_02

1.8 - Cabled Operation

1.8.1- Introduction

The CR3 is a Multi-Interface Unit (MIU) and is available with USB (6 ft. or 12 ft.), RS-232 (Serial) and PS/2 cables. All of the cables are connected to the CR3 with a 8-pin DIN connector.



Hand Held CR3 - To install a cable directly to the CR3, correctly line up the 8-pin DIN connector into the back end of the reader. The arrows on the connector should be facing down (Figure 1.10). When the reader and the cable connector are lined up, firmly push the cable into the reader. The cable has a locking mechanism that will firmly hold the cable in place (Figure 1.11). To deattach the cable from the reader, you must pinch the plastic on the 8-pin DIN and pull back to disengage the connector.

Figure 1.10

Figure 1.11

CR3 with Cabled Handle - If a handle was purchased for use with the CR3, the 8-pin DIN connector is at the bottom of the handle (Figure 1.12). Insert the 8-pin connector and firmly push the cable into the handle. The cable has a locking mechanism that will firmly hold the cable in place. If using the H2 cabled handle, for additional stability, there is an optional cable attachment clip that can secure the cable to the handle with two threaded screws (Figure 1.13).

Figure 1.12

Figure 1.13

1.8.2 - CR3 as a USB Keyboard

To connect the CR3 to your host computer via USB interface:

1. Attach the USB cable to CR3 (Figure 1.14).

2. There is no need to power off the computer (Figure 1.15) Connect the USB cable to a USB port on the computer (Figure 1.16).

3. Once properly connected, the CR3 will power on and beep.

4. Scan the below code (M049_03) for USB Keyboard Mode:

USB Keyboard Factory Reset

M049_03

Save Settings

M188_02

5. Scan the Save Settings Code (M188_02)

Figure 1.14

Figure 1.15

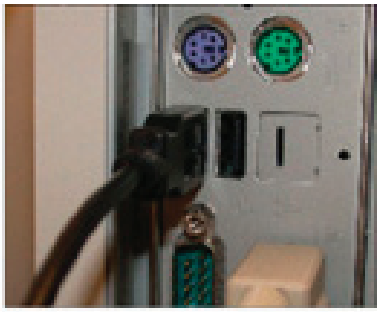


Figure 1.16

1.8.2.1 - Addional USB Communication Settings

USB Keyboard Mode - Data is sent from the Reader and interpreted by the host just as if a USB keyboard was being used to enter data.

USB Downloader - This mode is used when downloading firmware.

USB Native Two Way Mode - This mode is utilized when there is a need for error-corrected communication between the CR3 and an application through the USB port.

USB Virtual COM 1 Way Mode - This mode allows a USB-cabled CR3 to function as a virtual COM port. To use the CR3 in this mode, download the driver at **www.codecorp.com/downloads.html**.

USB HID POS (Terminal ID 131) - This mode allows a USB-cabled CR3 to communicate as a USB HID POS (Terminal ID 131) device.

Scan the following codes to set the appropriate USB communication setting:

USB Keyboard

M134_02

USB Downloader

M133_01

USB Native Two Way Mode

M135_04

USB Virtual COM 1 Way Mode

M668_01

USB HID POS (Terminal ID 131)

M736_01

1.8.2.2 - Keyboard Support

Scan the following codes to set appropriate keyboard mapping:

US English (Default)
No Leading 0
for non-printable characters

M172_01

US English - Leading 0
for non-printable characters

M602_01

US English - ctrl + char
for non-printable characters

M606_01

French

M603_01

German

M604_01

Japanese

M605_01

Universal Keyboard

M173_01

Custom Keyboard

Requests map to be installed

M171_01

Alternative OS
(Windows CE/MAC/Unix/Linux)
Enable

M585_02

Alternative OS Disable

M584_02

Save Settings

M188_02

1.8.3 - PS/2 Cable Installation Guide

1. Power off the computer. If you disconnect the computer's keyboard while it is powered on, your computer will lock up.

2. Attach the the PS/2 cable to the CR3.

3. If you have a cabled keyboard, detach the keyboard cable from the computer and connect that same connector to the female connection on the CR3 PS/2 cable (Figure 1.17).

4. Now connect the male CR3 PS/2 connector into the keyboard port on the computer (Figure 1.18).

5. Power on the computer. The CR3 is powered by the PS/2 port and does not require a power supply.

6. Once properly connected, the CR3 will power on and beep.

Figure 1.17

Figure 1.18

PS/2 Factory Reset

M060_03

Save Settings

M188_02

Code does not guarantee compatibility with all models of computers.

1.8.4 - RS-232 (Serial) Cable Installation Guide

1. Attach the RS-232 (Serial) Cable to the CR3.

2. Connect the RS-232 (Serial) cable to a serial port on the computer (Figure 1.19). There is no need to power off the computer.

3. The RS-232 (Serial) interface has an optional 5V/1.5A power supply (Figure 1.20). If you have a power supply, plug the power supply adapter into the RS-232 (Serial) cable and then plug the power adapter into a wall socket (Figure 1.21).

Figure 1.19

Figure 1.20

Figure 1.21

4. Once properly connected, the CR3 will power on and beep.

5. For RS-232 (Serial) mode scan M418_02 (below). If the power supply is not connected scan M074_02 (below).

6. Scan the Save Settings Code (M188_02).

RS-232 (Serial) Factory Reset

M418_02

RS-232 (Serial) Mode No Power Supply

M074_02

Save Settings

M188_02

RS-232 Factory Default Settings
Mode: RS-232 One Way Mode
Baud Rate: 57600
Stop Bits: 2
Data Bits: 8
Parity: None

Warning: Code Corporation approved power adapter must be used. Reader failure due to use of incorrect power adapter will void warranties.

1.8.4.1 - Additional RS-232 (Serial) Communication Data Bit Settings

Scan the following codes to set the appropriate data bit:

7 Data Bits

M100_01

8 Data Bits (Default)

M101_01

1.8.4.2 - Additional RS-232 (Serial) Communication Baud Rate Settings

Scan the following codes to set the appropriate baud rate:

1200

M092_01

2400

M093_01

4800

M094_01

9600

M095_01

19200

M096_01

38400

M097_01

57600 (Default)

M098_01

115200

M099_01

1.8.4.3 - Additional RS-232 (Serial) Communication Parity Settings

Scan the following codes to set parity:

Even

M102_01

Odd

M104_01

None (Default)

M103_01

1.8.5 - Cabled Reader - Time Out Settings

Scan one of the codes below to set the amount of time a cabled CR3 will be enumerated before entering sleep mode in order to more quickly charge the battery:

Note: These settings will only work in versions 2098 and above.

Cabled Reader Time Out: 2 hours

M136_01

Cabled Reader Time Out: Never (Default)

M137_01

Save Settings

M188_02

1.9 - Bluetooth Radio Operation

1.9.1 - Introduction

The CR3 features a Bluetooth® wireless radio. The radio allows for point-to-point wireless communication with other Bluetooth devices that support serial port protocol (SPP). If keyboard entry is necessary, Code XML Router will need to be installed. The following guide will give you general instructions on connecting your CR3 to a desktop or laptop computer with a Bluetooth radio.

Connecting With A QuickConnect Code

The easiest way to connect to a Bluetooth device is to visit the Code website and create a *QuickConnect Code* that is specific to your device (Figure 1.22). This code will link your CR3 directly to the desired Bluetooth device. To create a *QuickConnect Code,* you will need to know the Bluetooth address (often referred to as the BD_ADDR) of that device. You can usually find the 12-character Bluetooth address somewhere on the device near the device's serial number (see Figure 1.23).

Figure 1.22

Figure 1.23

If you purchased a CodeXML Bluetooth Modem or a Belkin® Bluetooth adapter from Code or from an authorized distributor, a QuickConnect Code was included. If you bought a Bluetooth adapter separately and wish to create a QuickConnect Code, please visit Code's web site at: **http://www.codecorp.com/bdaddr.php.**

Important Note: You will need to locate the Communications (COM) Port assigned to the Bluetooth serial port protocol. While installing the Bluetooth Configuration Manager Software that was included with your Bluetooth adapter, make sure to note the Communications (COM) Port number the software assigned for the adapter (e.g., COM 10). This is the COM Port through which the CR3 will connect.

To connect your reader, use the following steps:

1. Power on the CR3 reader by pressing one of the red buttons for one second to power on the reader.
2. Scan the Reset to RF Factory Defaults Code (M684_01).
3. Scan the Quick Connect Code you receieved or created from Code's website.
4. The CR3 will automatically connect to the computer. By default, the CR3 will beep once after it connects and beep four times in a row if it did not connect.
5. Scan the Save Settings Code (M188_02) if you want to save the wireless connection settings to the CR3 so that the CR3 will automatically try to connect wirelessly the next time it is powered on.

Reset to RF Factory Defaults

M684_01

Example: QuickConnect

Save Settings

M188_02

1.9 - Bluetooth Radio Operation (continued)

Radio Range and Transferring Data

The CR3 radio is a Class 1 device. If connected to another Class 1 device the reader has roughly a 100 meter (300 feet) line of sight operating range. If connecting to a Class 2 or Class 3 device, the operating range may drop to match the lower range. Once a reader is connected, a serial application must be opened (HyperTerminal) unless Code XML Router is installed.

When the CR3 detects the radio is out of range, the CR3 will store data on the reader's non-volatile memory. The reader will continue to try and send data until radio is back in range. Once the data is sent the data will be erased from the reader's memory. The reader will continue to try and connect until it has reached the programmable radio time out setting.

The CR3 Bluetooth protocol allows for two (2) forms of communication:

1. **Standard Bluetooth Reliability Mode** (previously One Way Mode) - Communication between the reader and host, that does not require host acknowledgement. This mode is only recommended when connecting to a device well within its specified range or if connecting to a simple device (e.g., printer). There are two settings in this mode:

   - Max Range (Default) - Greater range but data reliability is lower
   - Max Reliability - Limits range but reliability is improved

   RF Standard Bluetooth Reliability Mode (Max Range)

   M127_01

   RF Standard Bluetooth Reliablility Mode (Max Reliability)

   M128_01

   Note: One Way Mode doesn't guarantee data integrity, and you may have data loss when operating in the fringes of radio range or in the presence of radio interference.

2. **Additional Bluetooth Reliability Mode** (previously Two Way Mode) - This mode requires the implementation of software at the application level.* The reader receives confirmation via packet protocol verification and is 100% reliable. Data will be automatically retransmitted if necessary.

   RF Additional Bluetooth Reliability Mode

   M129_02

   *** Note:** You will need either Code XML Router Software or a Code XML Bluetooth Modem on the PC side to use the Additional Bluetooth Reliability Mode.

   If you are using the CodeXML Bluetooth Modem, you must use RF Additional Bluetooth Reliability Mode.

Save Settings

M188_02

1.9 - Bluetooth Radio Operation (continued)

Permanently Establishing a Connection

Scan the Save Settings Code at the bottom of the page to make the RF settings (including which device to connect to) permanent on the reader:

Disconnecting from the Device

You may force disconnection by reading the disconnect code below (The CR3 may not appear disconnected in the slave Bluetooth connection manager for 10 – 15 seconds after the command is issued). The CR3 will also disconnect after 90 seconds of inactivity (**Note:** You may change the radio sleep time out setting; however, it may reduce battery life).

Bluetooth Disconnect

M114_02

Reconnecting to the Device

If the device is saved in RF mode and has a save connection (save was performed while connected) it will automatically reconnect when:

1. CR3 is powered up
2. CR3 wakes from sleep mode
3. CR3 reads another code

1.9.2 - Bluetooth Radio Auto Connect

Auto Connect: After coming out of sleep mode or after powering up the CR3 tries to auto connect with the last Bluetooth radio with which it was connected if the steps (previous) were followed (see Section 1.7.1 - Connecting with a Quick Connect Code). You may also re-connect by scanning a QuickConnect code.

Scan the following codes to enable or disable Auto Connect feature for the Bluetooth radio:

Bluetooth Radio
Auto Connect: On (Default)

M068_01

Bluetooth Radio
Auto Connect: Off

M067_01

Note: Auto Connect should always be set to “On” if Auto Disconnect is set to “On”. Otherwise the QuickConnect code would need to be re-scanned after every disconnect.

1.9.3 - Bluetooth Radio Auto Disconnect

Auto Disconnect: This feature is used when multiple CR3 readers are connecting to the same Bluetooth Radio. By enabling Auto Disconnect the CR3 radio disconnects after each data transmission, allowing other radios to connect.

Scan the following codes to enable or disable Auto Disconnect feature for the Bluetooth radio:

Bluetooth Radio
Auto Disconnect: On

M066_01

Bluetooth Radio
Auto Disconnect: Off (Default)

M065_01

M188_02

Save Settings

1.9.4 - Bluetooth Radio Time Out Settings

Scan the following codes to set the period of time before the Bluetooth Radio will go into sleep mode due to inactivity:

Note: Increasing the time before the reader will time out will decrease battery life.

90 Seconds (Default)

M125_01

5 Minutes

M121_01

10 Minutes

M122_01

15 Minutes

M123_01

30 Minutes

M124_01

1 Hour

M119_01

2 Hours

M120_01

1.9.5 - Bluetooth Radio Out of Range Notification Settings

Scan the following codes to enable a beep or vibrate notification when the radio goes out of range:

Bluetooth - Out of Range
Beep: On

M583_01

Bluetooth - Out of Range
Notify with Vibrate: On

M582_01

Bluetooth - Out of Range
Vibrate & Beep: On

M587_01

Bluetooth - Out of Range
Vibrate and/or Beep: Off (Default)

M581_01

Note: This feature may also be utilized to remind users they are carrying a reader and help prevent users from walking away with a reader Bluetooth radio.

1.9.6 - Auto Save Last Bluetooth Address

If the reader is saved in the proper RF communication mode, enabling this setting will allow the reader to automatically save the last device to which it was connected, removing the need to scan the save setting after scanning the QuickConnect code.

Enable Auto Save

M746_01

Disable Auto Save (Default)

M747_01

Save Settings

M188_02

1.9.7 - Configuration for Belkin Bluetooth Manager Software (Version 1.4.2.10)

In this version of the Belkin Bluetooth Manager software, you must disable the authentication feature to connect a CR3. Follow the steps below:

1. Double click on the Bluetooth icon in the system tray. In the My Bluetooth Places Screen, select Advanced Configuration.

figure 1

figure 2

2. Select the Local Services tab and double click on the Bluetooth Serial Port. Inder the General tab unselect the Secure Connection box. This disables the encryption feature and allows the CR3 to connect to the Bluetooth adapter. Click Apply.

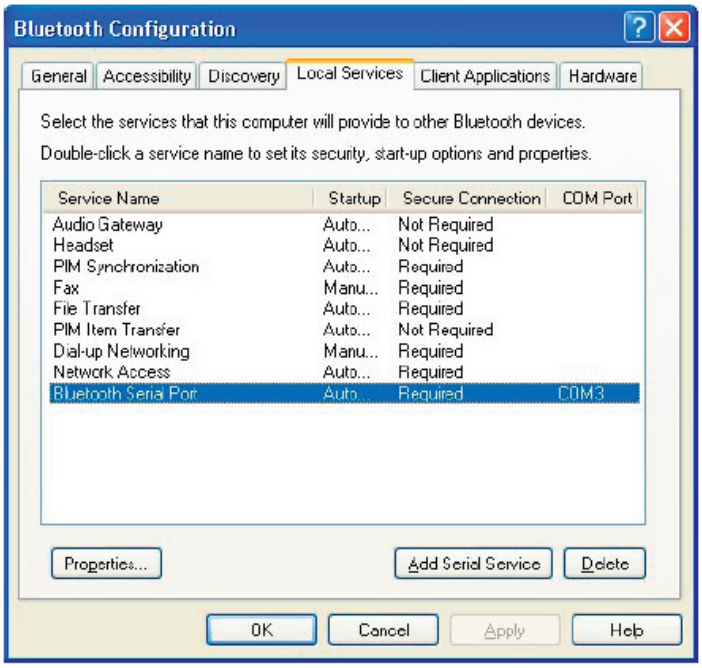

Bluetooth Configuration
General Accessibility Discovery Local Services Client Applications Hardware
Select the services that this computer will provide to other Bluetooth devices.
Double-click a service name to set its security, start-up options and properties.
Service Name Startup Secure Connection COM Port
Audio Gateway Auto... Not Required
Headset Auto... Not Required
PIM Synchronization Auto... Required
Fax Manu... Required
File Transfer Auto... Required
PIM Item Transfer Auto... Not Required
Dial-up Networking Manu... Required
Network Access Auto... Required
Bluetooth Serial Port Auto... Required COM3
Properties...
Add Serial Service
Delete
OK
Cancel
Apply
Help

figure 3

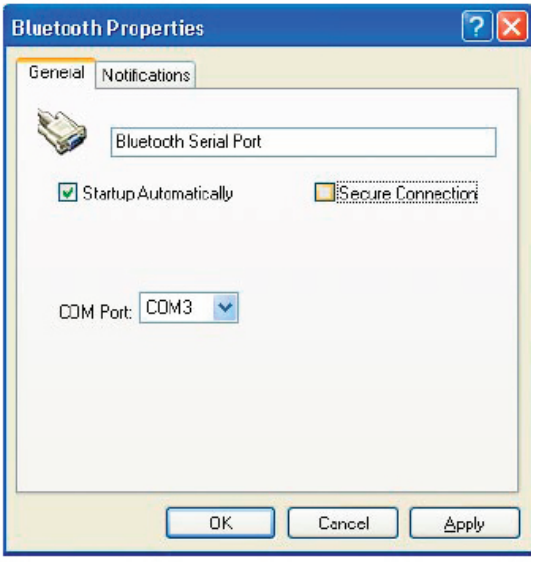


figure 4

1.9.7 - Configuration for Belkin Bluetooth Manager Software (Continued)

3. Your local service Bluetooth Serial Port profile should now read “Not Required”

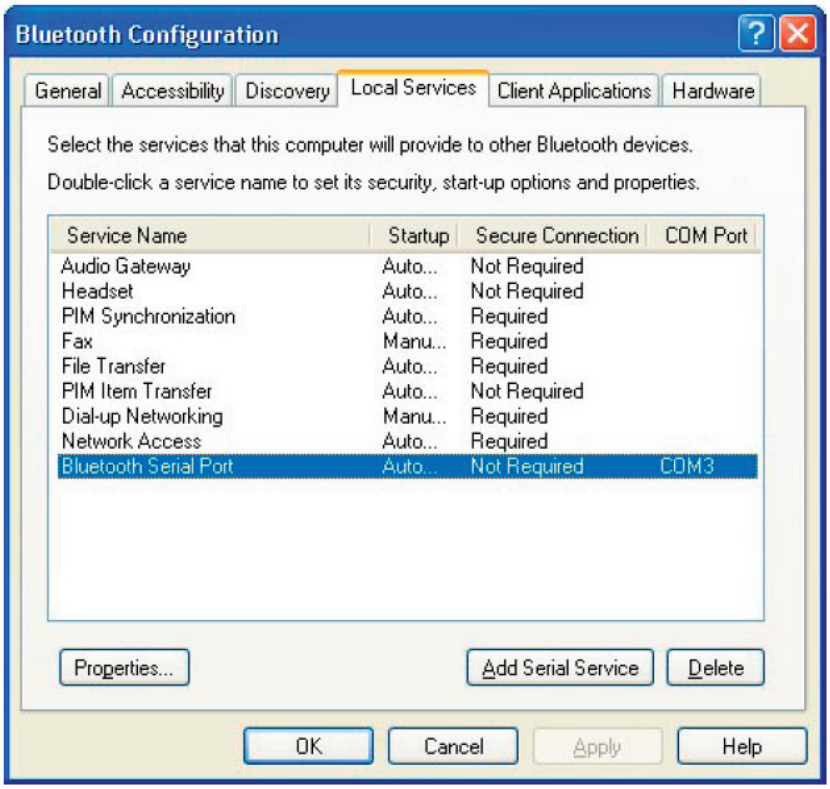


figure 5

4. Open the “Accessibility” Tab and verify that “All Devices” are allowed to connect (this is the default setting). You should now be able to connect your CR3.

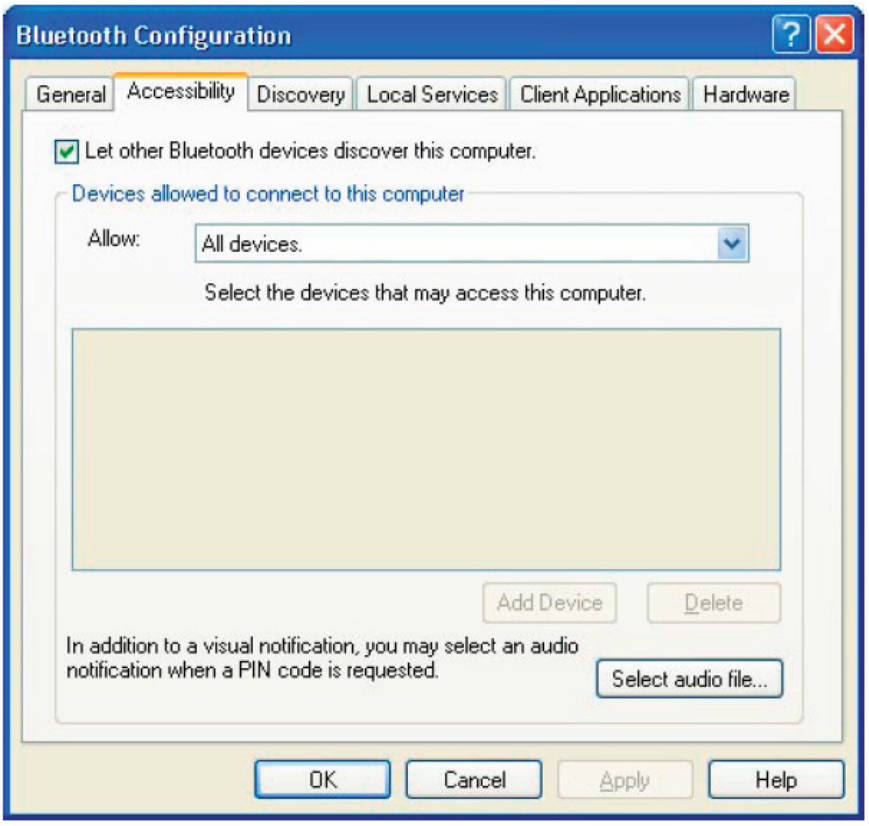
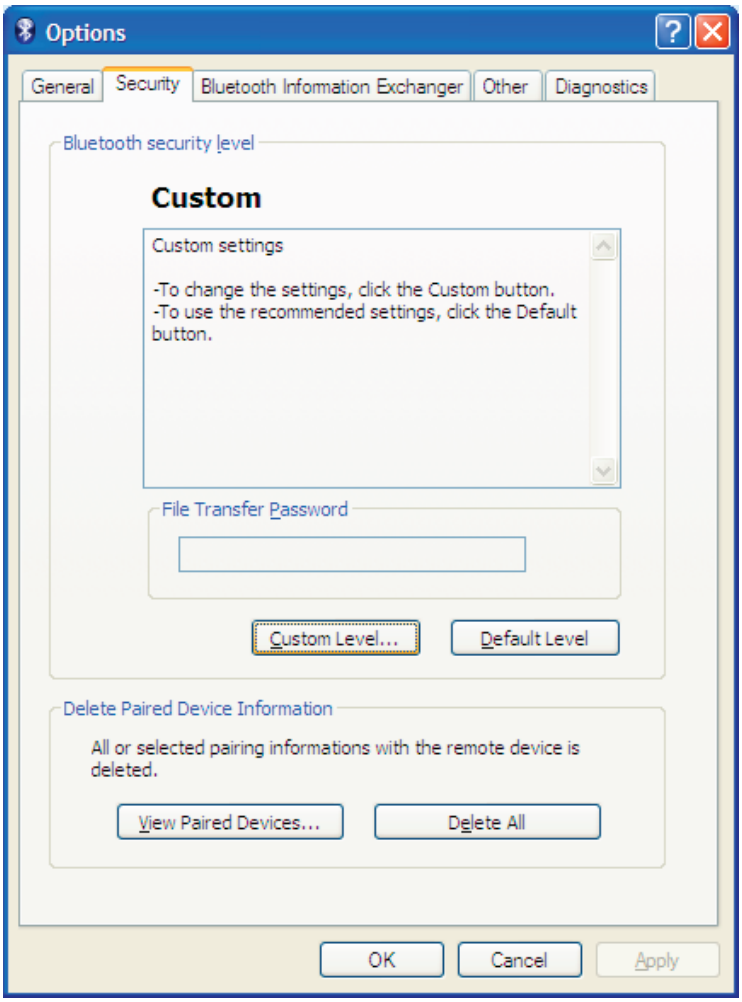


figure 6

1.9.8 - Configuration for Toshiba Bluetooth Stack Instructions (continued)

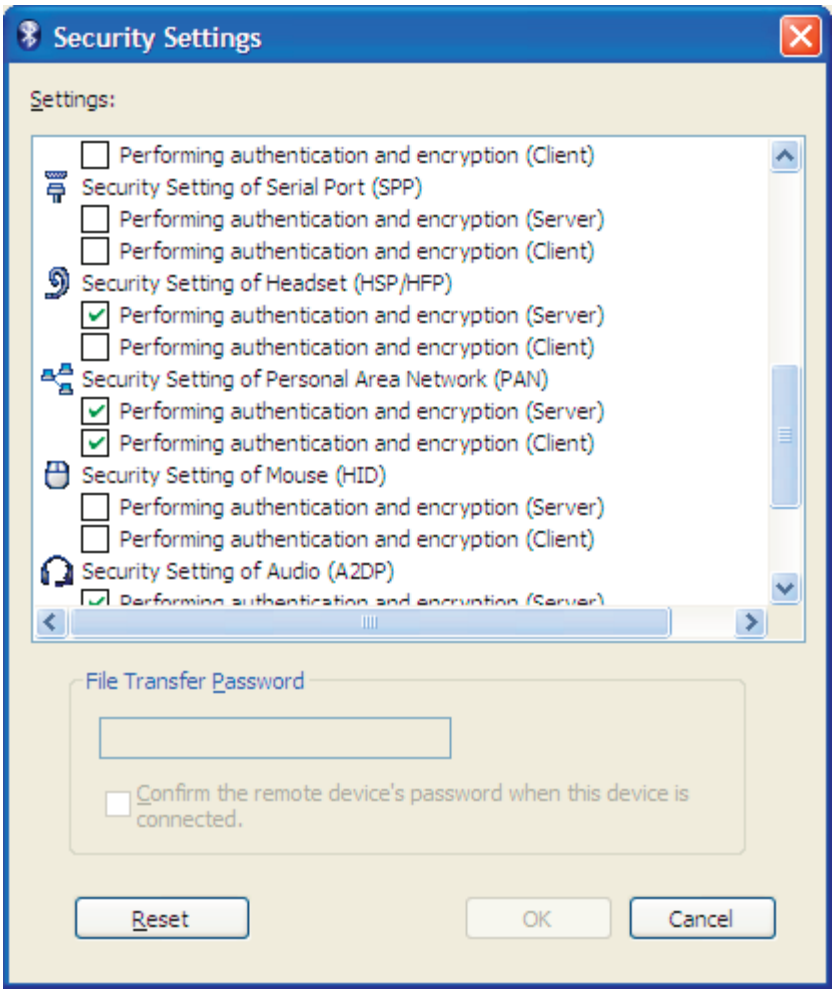
3a. Go to **http://www.codecorp.com/bdaddr.php** and create a QuickConnect code using the address from step 3. Use the CodeXML Router/ 2-way applications section if CodeXML Router will be installed. Else create a QuickConnect Code using the section for Serial Applications.

4. Optional – To remove the Passkey dialogue when connecting, Select the Security TAB and Select Custom Level.



1.9.8 - Configuration for Toshiba Bluetooth Stack Instructions (continued)

4a. Uncheck the settings under the Security Setting of Serial Port (SPP).


Security Settings
Settings:
Performing authentication and encryption (Client)
Security Setting of Serial Port (SPP)
Performing authentication and encryption (Server)
Performing authentication and encryption (Client)
Security Setting of Headset (HSP/HFP)
Performing authentication and encryption (Server)
Performing authentication and encryption (Client)
Security Setting of Personal Area Network (PAN)
Performing authentication and encryption (Server)
Performing authentication and encryption (Client)
Security Setting of Mouse (HID)
Performing authentication and encryption (Server)
Performing authentication and encryption (Client)
Security Setting of Audio (A2DP)
File Transfer Password
Confirm the remote device's password when this device is connected.
Reset
OK
Cancel

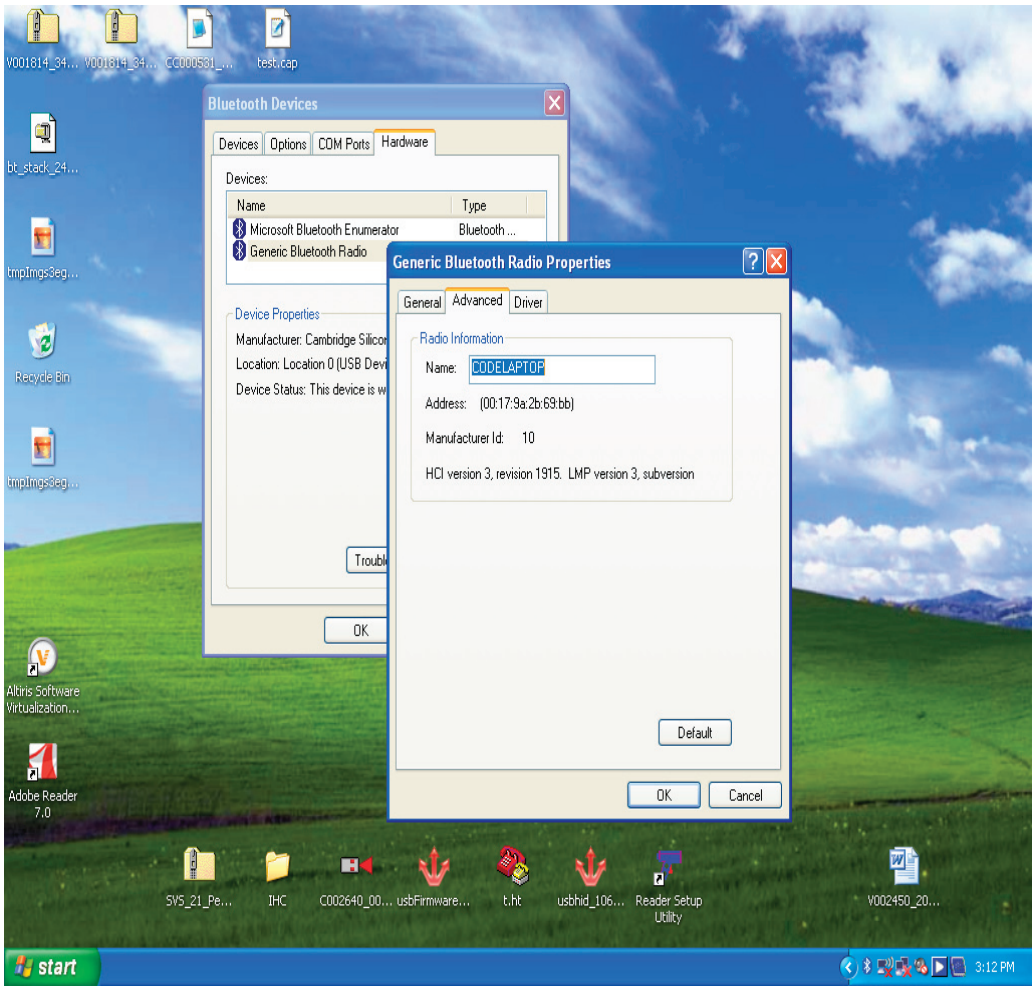
5. Install the Code XML Router Software to the Device on the Appropriate COM Port. Reboot the PC and then scan your QuickConnect code to connect. Please note that the Toshiba Stack does not allow a device to connect until the Com Port is opened. CodeXML Router must be installed or the serial application must be started before the QuickConnect Code is read.

6. Scan the QuickConnect Code generated in step 3. If step 4 was not done, Windows will prompt for a Passkey. The default Passkey is “12345678”.

1.9.9 - Configuration for Microsoft Bluetooth Stack Instructions

1. Right click on the Microsoft Bluetooth Stack system tray icon, select “Open Bluetooth Settings”.

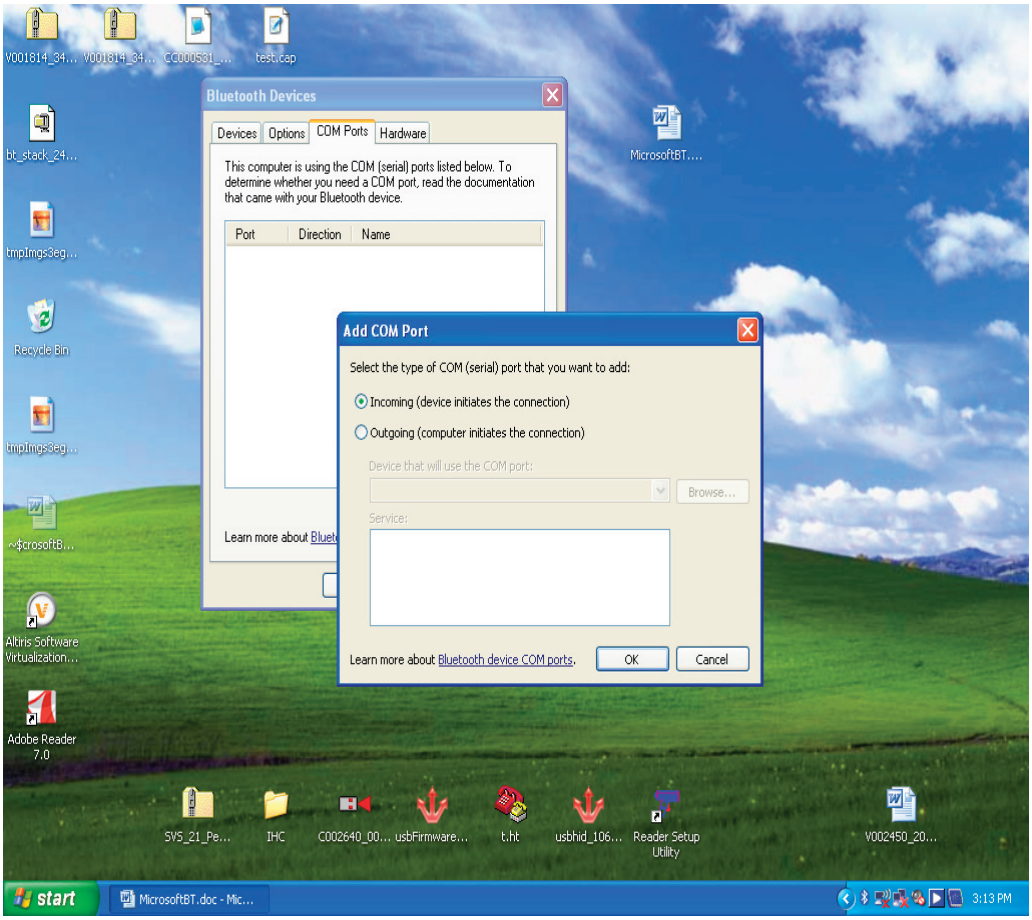
2. Go to the “Hardware” tab and select the “Generic Bluetooth Radio” and then click “Properties”. Next select the “Advanced” tab. Note the Address. For the example show below it is 00:17:9a:2b:69:bb.



1.9.9 - Configuration for Microsoft Bluetooth Stack Instructions (continued)

2a. Go to **http://www.codecorp.com/bdaddr.php** and create a QuickConnect code using the address from step 2. Use the CodeXML Router/ 2-way applications section if CodeXML Router will be installed, otherwise create a QuickConnect Code using the section for Serial Applications.

3. Under “COM Ports” tab, select “Add”. In Add COM Port dialog box, select Incoming, click OK. Windows Installs driver and create a Bluetooth COM Port. Note the COM port number.



4. Install the Code XML Router Software to the Device on the Appropriate COM Port. Reboot the PC and then scan your QuickConnect code to connect. Please note that the Window Stack does not allow a device to connect until the Com Port is opened. CodeXML Router must be installed or the serial application must be started before the QuickConnect Code is read.

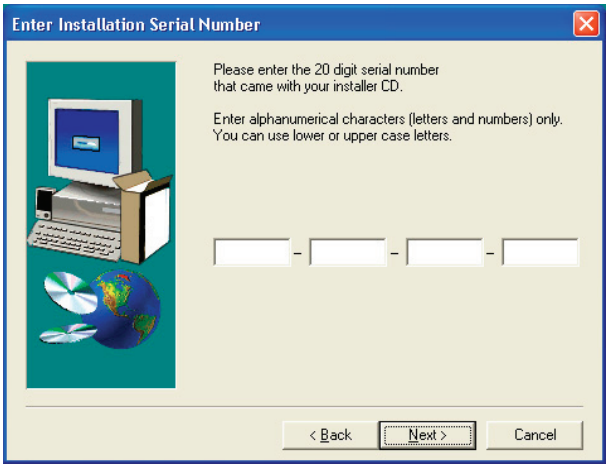
5. Scan the QuickConnect Code generated in step 3. Windows will prompt for a Passkey. The default Passkey is “12345678”.

Save Settings

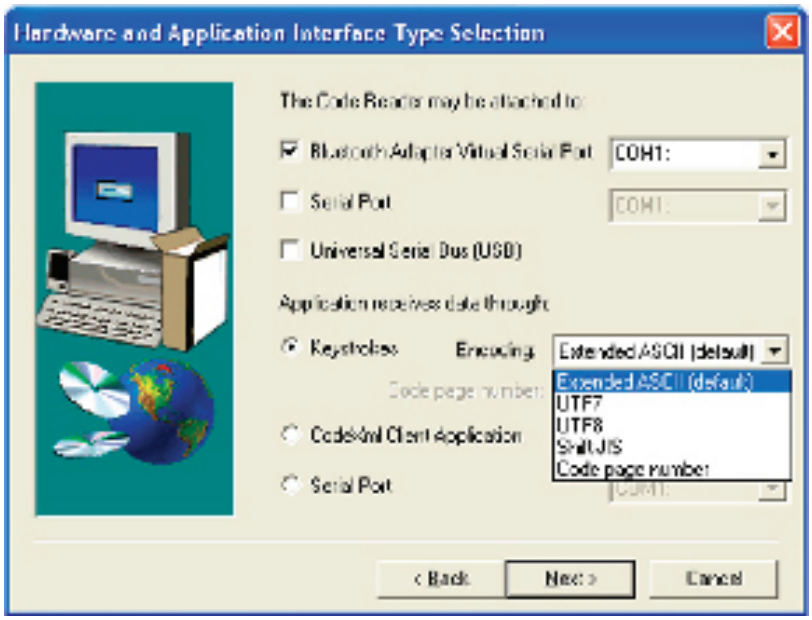
M188_02

1.9.10 - Installing CodeXML Router Bluetooth Edition for Windows

1. Insert the Code Router Bluetooth Edition for Windows CD into your PC's CD drive. The CD will automatically begin the installation process. When you get to the screen pictured below, please enter the CD Serial # Key found on the card included in the CD case.


Enter Installation Serial Number
Please enter the 20 digit serial number that came with your installer CD.
Enter alphanumerical characters (letters and numbers) only. You can use lower or upper case letters.
< Back
Next >
Cancel

2. When you get to the screen pictured below, please choose from the appropriate settings. For a description of each setting, please see Chapter 3. **If connecting via Bluetooth radio, you will need to know the Virtual COM port number your Bluetooth software has assigned (see Frequently Asked Questions).** If you wish to enable the AutoDownload feature please check the appropriate box in the next screen. Finish the installation process and restart your computer.



3. After restarting your computer, you will see a blue "arrows" icon in the system tray of your computer. CodeXML Router was successfully installed.

1.10 - CR3 Feedback Guide

The chart below shows potential icon combinations in CodeViewer™ software. Consult the chart to verify a configuration.

Possible CR3 Configurations			
RS232	**PS2**	**USB**	**Bluetooth Radio**
RS232 One Way Mode This mode is the standard way of transferring unformatted, unpacketized data through the serial/RS232 port.	**PS2 Keyboard Mode** This mode is the standard mode for transferring data from the CR3 through a PS2 port.	**USB One Way Mode** This mode is the standard way of transferring unformatted, unpacketized data through a USB port.	**Bluetooth One Way Mode** This mode is a way of transferring unformatted, unpacketized data by radio frequency (Bluetooth).
RS232 Two Way Mode This mode allows for reliable communication by utilizing packet acknowledgement protocol.		**USB Two Way Mode** This mode is utilized when there is a need for packetized, bidirectional communication between the CR3 and an application through a USB port. **USB Keyboard Mode** This mode emulates the transfer of data from the CR3 to a host computer via a keyboard interface.	**Bluetooth Two Way Mode** This mode is utilized when there is a need for packetized, bidirectional communication between the CR3 and an application by radio frequency (Bluetooth). This requires implementation of software at the application level. The reader receives confirmation via packet protocol verification and is 100% reliable. Code offers a Windows or PocketPC version of software called CodeXML Router Bluetooth Edition (BE) that automatically provides packet protocol verification. CodeXML Router BE allows for end-to-end Bluetooth handshakes that eliminate issues with out-of-range data loss.
RS232 Secure Mode This mode is utilized for transferring data in an encrypted format from the CR3 to a host computer through the serial/RS232 port.		**USB Virtual COM Port 1 Mode** This mode allows communication between a USB port and an application expecting serial input. A virtual com driver must be loaded onto the host computer before reader can be utilized in this mode. ** See Note.	**Bluetooth Secure Mode** This mode is utilized for transferring data in an encrypted format from the CR3 to a host computer through a Bluetooth connection.
		USB Secure Mode This mode is utilized for transferring data in an encrypted format from the CR3 to a host computer through a USB port.	
		USB Downloader Mode This mode is used when downloading firmware changes to the reader.	** Note: USB Virtual COM Port Driver is available for download on Code's website at: **www.codecorp.com/downloads**

M188_02

Save Settings

1.11 - Targeting and Reading Techniques

The CR3 utilizes digital camera technology to take a picture of a symbol. Once an image is captured, the CR3 utilizes advanced decoding algorithms to extract data from the captured image.

The CR3 is available as a palm-held unit or users may purchase a handle (available in various types).

The palm held unit features left and right triggers. These triggers may be programmed to perform various features. The reader is shipped with the left trigger and right trigger functioning as a decode symbol command.

Each handle has a trigger on the grip. The two triggers on the top of the unit also work when the handle is attached.

To read a symbol with the CR3:

1. The CR3 features omnidirectional decoding. Center the symbol in any orientation within the laser dot aiming pattern (Figure 1.24).

Figure 1.24

Note: The CR3 can read a symbol that is not centered; however the CR3 performs best when a code is centered. If two (2) bar codes are within the imager's decode zone, the CR3 will decode the symbol closest to the center of the aiming dot.

2. The CR3 was developed to decode both very small 2-dimensional symbols and larger 1-dimensional symbols. The unit has an innovative dual field decode zone. The CR3 **DECODES BOTH ZONES SIMULTANEOUSLY**. The unit has a lens focused on a near-field for smaller codes (optimal focal point is 4 inches) and one lens focused on a far-field for larger codes (optimal focal point 9 inches). To read smaller symbols move the CR3 closer to the symbol. To read larger symbols move the unit farther away from the symbol. The entire CR3 decode zone varies between two (2") and twenty (20+") or more inches.

3. Hold the CR3 still - **DO NOT SWIPE OR MOVE THE READER.** Press the trigger until the CR3 beeps, indicating the code has been successfully decoded.

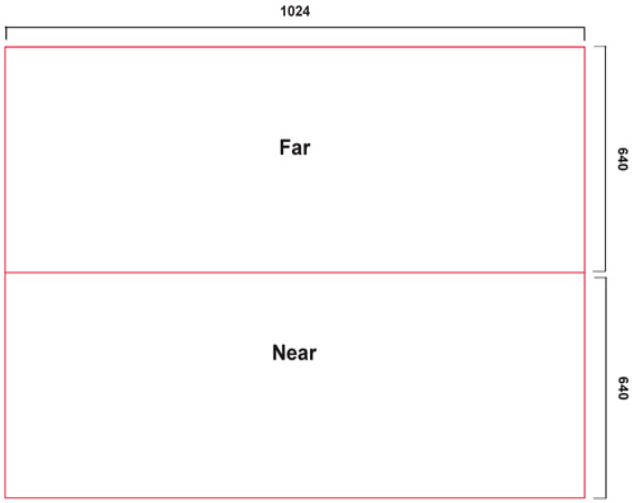
4. The reader may be optimized to your specific environment by scanning codes in Chapter 2.

1.12 - Imager Field of View and Resolution

The CR3's dual field optical system may be modified based on your scanning environment. The CR3's megapixel imager may be set to the following three modes:

The 1.3 Million Pixel imager is divided into near field and far field decode zones. In each zone the resolution is 1024 x 640 pixels (see Figure 1.25). In this mode of operation the reader utilizes the highest resolution creating the widest working range on bar code and 2-dimensional symbols of all densities. The trade-off is the amount of time the reader spends processing the image. This time can be reduced by optimization functions:

If only the near field is used (small symbols), the far field image can be ignored. If only the far field is used (large symbols), the near field can be ignored. Further optimization may be obtained by "windowing" the field to a smaller area. Each focal area may be narrowed by enabling the windowing feature found in section 5.2.



SXGA Imaging Area

Figure 1.25

1.13 - Decode Zone

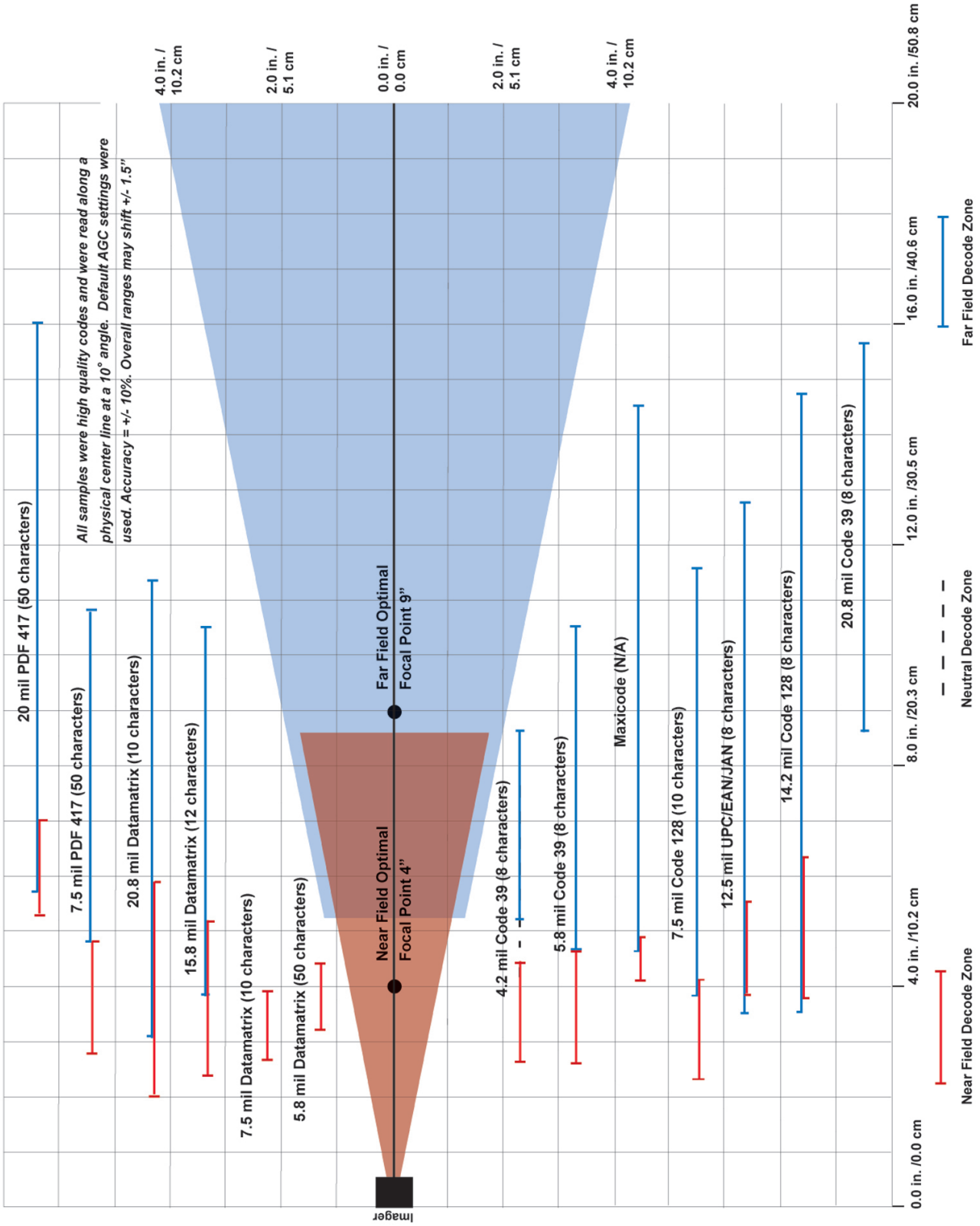

4.0 in. / 10.2 cm
2.0 in. / 5.1 cm
0.0 in. / 0.0 cm
2.0 in. / 5.1 cm
4.0 in. / 10.2 cm
20.0 in. /50.8 cm
16.0 in. /40.6 cm
12.0 in. /30.5 cm
8.0 in. /20.3 cm
4.0 in. /10.2 cm
0.0 in. /0.0 cm
All samples were high quality codes and were read along a physical center line at a 10° angle. Default AGC settings were used. Accuracy = +/- 10%. Overall ranges may shift +/- 1.5"
Far Field Optimal
Focal Point 9"
Near Field Optimal
Focal Point 4"
20 mil PDF 417 (50 characters)
7.5 mil PDF 417 (50 characters)
20.8 mil Datamatrix (10 characters)
15.8 mil Datamatrix (12 characters)
7.5 mil Datamatrix (10 characters)
5.8 mil Datamatrix (50 characters)
4.2 mil Code 39 (8 characters)
5.8 mil Code 39 (8 characters)
Maxicode (N/A)
7.5 mil Code 128 (10 characters)
12.5 mil UPC/EAN/JAN (8 characters)
14.2 mil Code 128 (8 characters)
20.8 mil Code 39 (8 characters)
Far Field Decode Zone
Neutral Decode Zone
Near Field Decode Zone
Imager

Figure 1.26

Chapter 2 - Optimization and Trigger Programming

Save Settings

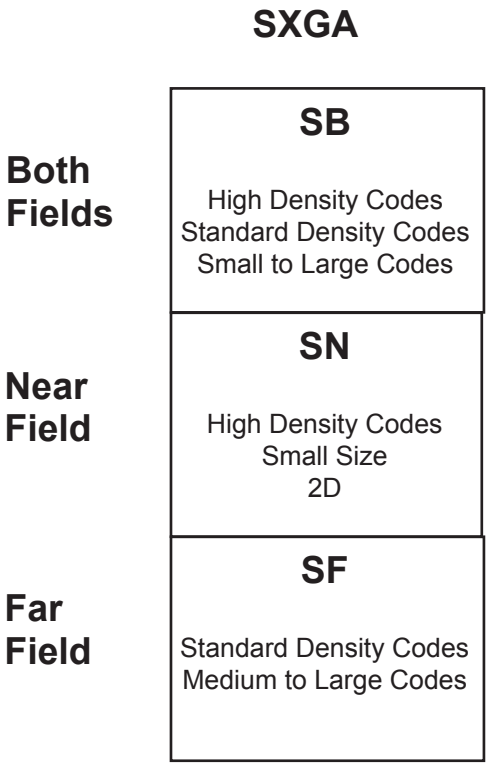
M188_02

2.1 - Introduction

From the moment you turn on your CR3, you are taking full advantage of the dual path 1.3 megapixel imager, the 400 MHz processor. CR3 readers are able to read a wide range of symbology types and sizes, as well as a variety of printed media, within a wide range of environmental factors including light (natural or ambient lighting).

By defining if you are scanning large, small, high denisty or low density types of symbology(s), the CR3 has options that will maximize decoding speed.

The chart below shows options that will improve performance based on parameters listed in each box.



The CR3 is easily customizable; each trigger can be independently programmed for different behavior.

Near Field (NF): The closest optimal focal point of the CR3's two image fields. The Near Field can decode the highest density barcode. It has an optimal focal point of 4" (101.6 mm) away from the lens of the reader. See Figure 1.26 for optimal read distances.

Far Field (FF): The farthest field of the CR3's two image fields. It has an optimal focal point of 9" (228.6 mm) away from the lens of the reader with a 4" wide field of view at this point.

The following tables provide readable codes to program all or individual triggers to perform within different parameters. See Figure 1.26 for optimal read distances.

2.2 - Global Trigger Optimization Matrix

	SXGA
Both Fields	M613_03
Near Field	M614_03
Far Field	M615_03

2.3 - Left Trigger Optimization Matrix

	SXGA
Both Fields	M631_02
Near Field	M632_02
Far Field	M633_02

2.4 - Left Trigger Programming

Left Trigger Take Picture

M179_01

Note: If you program a trigger to another function, you will need to reset any performance code settings.

2.5 - Right Trigger Optimization Matrix

	SXGA
Both Fields	M640_02
Near Field	M641_02
Far Field	M642_02

2.6 - Right Trigger Programming

Right Trigger Take Picture

M186_01

Note: If you program a trigger to another function, you will need to reset any performance code settings.

2.7 - Handle Optimization Matrix

	SXGA
Both Fields	M622_03
Near Field	M623_03
Far Field	M624_03

2.8 - Handle Trigger Programming

Handle Trigger Take Picture

M154_04

Note: If you program a trigger to another function, you will need to reset any performance code settings.

Save Settings

M188_02

2.9 - Continuous Trigger Optimization Matrix

Scanning codes in the matrix puts the reader into Continous scan.

SXGA

Both Fields	M649_02
Near Field	M650_02
Far Field	M651_02

2.10 - Continuous Scan

Off (Default)

M141_02

On

M138_01

Note: This function is only recommended for cabled or short term use if battery is the only power supply. See section 2.11.1 for Sleep Time Out Settings.

Save Settings

M188_02

2.11 - Continuous Scan Settings

2.11.1 - Continuous Scan - Sleep Time Out

Scan one of the codes below to set the amount of time a cabled CR3 will operate in continuous scan mode, without a decode, before entering sleep mode:

Cabled - 2 hours (Default)

M136_01

Cabled - Always

M137_01

Scan one of the codes below to set the amount of time an uncabled CR3 will operate in continuous scan mode before entering sleep mode:

Uncabled - 5 minutes (Default)

M145_01

Uncabled - 15 Minutes

M146_01

Uncabled - 30 Minutes

M147_01

Note: This function is only recommended for short term use because of battery consumption.

2.11.2 - Continuous Scan - Trigger Delays

Scan the following codes to set delay time between scans:

0 Seconds (Default)

M142_01

1 Second

M143_01

3 Seconds

M144_01

2.11.3 - Continuous Scan - Duplicate Scan Delay

Scan the following codes to set the delay time for reading duplicate codes:

0 Seconds (Default)

M222_01

1 Second

M223_01

3 Seconds

M224_01

2.12 - Motion Detection Scan Settings

Scan the following codes to set the reader to read when it detects motion in its scanning zone.

On

M701_01

Off (Default)

M702_01

Save Settings

M188_02

Chapter 3 - CR3 Programming: Symbology Settings

3.1 - Aztec Symbology

Scan the following codes to enable/disable Aztec symbology settings:

Aztec On

M273_01

Aztec Off (Default)

M272_01

Sample Aztec Code

3.2 - Codabar Symbology

Scan the following codes to enable/disable Codabar symbology settings:

Codabar On (Default)

M275_01

Codabar Off

M274_01

Sample Codabar

A123456789A

3.3 - Codablock F Symbology

Scan the following codes to enable/disable Codablock F symbology settings:

Codablock F On

M277_01

Codablock F Off (Default)

M276_01

Sample Codablock F Code

Note: When Codablock F and Code 128 decoding are enabled, there is some danger of mistakenly decoding a damaged Codablock F symbol as a Code 128 symbol. Therefore, Code 128 decoding should be disabled when Codablock F decoding is enabled.

3.4 - Code 11 Symbology

Scan the following codes to enable/disable Code 11 symbology settings:

Code 11 On (Default)

M394_01

Code 11 Off

M393_01

Code 11 Checksum 1 digit

M395_01

Code 11 Checksum 2 Digit & Stripped from Result

M396_01

Code 11 Checksum 1 Digit & Stripped from Result

M397_01

Code 11 Sample

Save Settings

M188_02

3.5 - Code 39 Symbology

Scan the following codes to enable/disable Code 39 symbology settings:

Code 39 On (Default)

M235_01

Code 39 Off

M234_01

Enable Checksum

M237_01

Disable Checksum (Default)

M236_01

Enable Checksum and Strip From Result

M238_01

Code 39 Extended Full ASCII On

M233_01

Code 39 Extended Full ASCII Off (Default)

M232_01

Code 39 Short Margin On

M390_01

Code 39 Short Margin Off (Default)

M389_01

Code 39 Trioptic On

M671_01

Code 39 Trioptic Off

M670_01

Sample Code 39 Code

Sample Trioptic Code 39

3.6 - Code 93 Symbology

Scan the following codes to enable/disable Code 93 symbology settings:

Code 93 On (Default)

M281_02

Code 93 Off

M280_01

Sample Code 93 Code

3.7 - Code 128 Symbology

Scan the following codes to enable/disable Code 128 symbology settings:

Code 128 On (Default)

M283_01

Code 128 Off

M282_01

Code 128 Short Margin On

M392_01

Code 128 Short Margin Off (Default)

M391_01

Sample Code 128 Code

12345678912345

Note: When Codablock F and Code 128 decoding are enabled, there is some danger of mistakenly decoding a damaged Codablock F symbol as a Code 128 symbol. Therefore, Code 128 decoding should be disabled when Codablock F decoding is enabled.

3.8 - Composite Symbologies

Scan the following codes to enable/disable Composite symbology settings:

Composite On

M285_02

Composite Off (Default)

M284_02

3.9 - Data Matrix Symbology

Scan the following codes to enable/disable Data Matrix symbology settings:

Rectanglular Data Matrix On

M242_01

Rectangular Data Matrix Off (Default)

M241_01

Data Matrix Inverse On

M239_01

Data Matrix Inverse Off (Default)

M240_01

Enable improved reading capability for hard to decode datamatrix symbols.

M744_01

Disable improved reading capability for hard to decode datamatrix symbols. (Default)

M745_01

Sample Data Matrix Code

Sample Rectangular Data Matrix Code

Save Settings

M188_02

3.10 - GoCode Symbology

GoCode is a miniature, two-dimensional (2-D) symbol. Developed to fit within a line of text, GoCode features a multi-dimensional, adaptable matrix pattern that may be reproduced on virtually any surface. GoCode is a private symbology and may be utilized by purchasing a runtime license through Code. GoCode has many significant advantages over all common linear barcodes and 2-D symbols. Please contact Code for more information on the benefits of utilizing a private symbology.

Sample GoCode

3.11 - Interleaved 2 of 5 Symbology

Scan the following codes to enable/disable Interleaved 2 of 5 symbology settings:

Int 2 of 5 On (Default)

M244_01

Int 2 of 5 Off

M243_01

Int 2 of 5 Two Digits On

M246_01

Int 2 of 5 Two Digits Off

M245_02

Int 2 of 5 Four Digits On

M248_01

Int 2 of 5 Four Digits Off

M247_01

Sample Int 2 of 5 Code

123456789

3.12 - Maxicode Symbology

Scan the following codes to enable/disable Maxicode symbology settings:

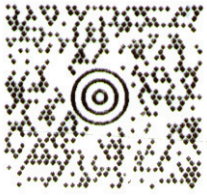
Maxicode On

M289_04

Maxicode Off (Default)

M288_01

Sample Maxicode



Save Settings

M188_02

3.13 - Matrix 2 of 5 Symbology

Scan the following codes to enable/disable Matrix 2 of 5 symbology settings:

Matrix 2 of 5 On (Default)

M675_01

Matrix 2 of 5 Off

M674_01

Matrix 2 of 5 Sample

3.14 - Micro PDF417 Symbology

Scan the following codes to enable/disable micro PDF 417 symbology settings:

MicroPDF417 On

M301_01

MicroPDF417 Off (Default)

M300_01

Sample MicroPDF417

3.15 - MSI Plessy Symbology

Scan the following codes to enable/disable MSI Plessy symbology settings:

MSI Plessy On

M291_01

MSI Plessy Off (Default)

M290_01

Sample MSI Plessy

3.16 - NEC 2 of 5 Symbology

Scan the following codes to enable/disable NEC 2 of 5 symbology settings:

NEC 2 of 5 On

M673_01

NEC 2 of 5 Off (Default)

M672_01

3.17 - Optical Character Recognition (OCR)

The Code Reader can read Optical Character Recognition (OCR) texts. The following codes can be used to enable/disable this feature. Fonts supported include Passport, ISBN, Price, MICR13, and a user defined template:

Disable OCR (Default)

M712_01

Enable OCR

M713_01

Purchase of OCR license required.

Save Settings

M188_02

3.18 - PDF 417 Symbology

Scan the following codes to enable/disable PDF 417 symbology settings:

PDF 417 On (Default)

M293_01

PDF417 Off

M292_01

Macro PDF 417 On

M287_01

Macro PDF 417 Off (Default)

M286_01

Sample PDF 417 Code

3.19 - Pharmacode

For an explanation of Pharmacode settings and all programming codes please refer to Appendix G of the CR3 User Manual. You may download the Appendix G at:

http://www.codecorp.com/manuals.html

3.20 - Postal Symbologies

All postal code default settings are OFF. Scan the following codes to enable the appropriate Postal symbology:

Note: If you wish to change which Postal code is activated, you MUST first scan the disable all postal codes symbol and then scan your desired symbology.

Australian Post On

M252_01

Japan Post On

M253_01

KIX

M254_01

Planet On

M256_01

Postnet On

M257_01

Postnet and Planet On

M255_01

Royal Mail On

M258_01

Disable All Postal Codes (Default)

M259_01

Sample Postnet Code

4-State CB On (Intelligent Mail)

M748_01

M188_02

Save Settings

3.21 - QR Code Symbology

Scan the following codes to enable/disable QR Code symbology settings:

QR Code On

M261_01

QR Code Off (Default)

M260_01

Enable Checksum

M265_01

Disable Checksum (Default)

M264_01

QR Code Inverse On

M262_01

Both Inverse and Standard On

M263_01

All QR On (includes Micro QR)

M609_03

Inverse QR and Micro QR On

M687_03

Sample QR Code

Sample Micro QR

3.22 - GS1 data bar (formerly RSS) Symbology

Scan the following codes to enable/disable GS1 data bar (formerly RSS) symbology settings:

GS1 data bar Limited On

M268_01

Truncated On

M271_01

GS1 data bar 14 Stacked On

M270_01

GS1 data bar Expanded On (Default)

M269_01

All GS1 data bar On

M267_01

All GS1 data bar Off

M266_01

Sample GS1 data bar Limited Code

Sample GS1 data bar 14 Code

Sample GS1 data bar 14 Truncated Code

Sample GS1 data bar 14 Stacked Code

M188_02

Save Settings

3.23 - Telepen Symbology

Scan the following codes to enable/disable Telepen symbology settings:

Telepen On - Default

M677_01

Telepen Off

M676_01

Sample Telepen

23456781

3.24 - UPC/EAN/JAN

Scan the following codes to enable/disable UPC/EAN/JAN symbology settings:

UPC On (Default)

M295_01

UPC Off

M294_01

UPC Short Margin Enabled

M299_01

UPC Short Margin Disabled (Default)

M298_01

UPC Extension On

M297_01

UPC Extension Off

M296_01

Sample UPC A Code

1 23456 78912 8

Chapter 4 - Reader Feedback and Special Settings

4.1 - Volume and Vibration Settings

Scan the following codes to set vibration mode:

Vibrate On / Beep On

M107_01

Vibrate On / Beep Off

M109_01

Vibrate Off / Beep On (Default)

M108_01

Scan the following codes to set your reader's volume:

Beep Off

M110_01

Beep Low

M111_01

Beep High (Default)

M112_01

4.2 - Code Readability Index

The Readability Index provides a measurement of a specific symbol's ease or difficulty to be decoded by the CR3. The Readability Index is specific to the CR3, and should not be confused with a verification quality measurement.

The Readability Index is a blend of information obtained from the internal operations of the decoding algorithm pertaining to contrast, symbology construct, error detection, forward error correction (if applicable), and other symbology-specific characteristics.

The Readability Index is a score on a scale of 01 (very poor) to 100 (very readable). Due to differences based on motion, skew, reflection, focus, and ambient lighting, the Readability Index on the same symbol may vary somewhat from read to read. However, a poor contrast or damaged symbol will score lower than a high contrast undamaged symbol. The Readability Index can be used as a quick check on the reliability of label generation or marking systems. When used in conjunction with the CR3 stand (or fixed mount positioning) which fixes the distance from the reader to the symbol, and constant ambient light, the Readability Index provides a symbol quality assurance tool and check point for feedback to an overall label or marking quality control system.

The Readability Index is enabled by first reading a CodeXML rule into the permanent CR3 Memory:

Code Readability Index Rule:

M061_02

Readability Index Output Enable:

M062_02

Readability Index Output Disable:

M063_02

Each time a data symbol is read, the index will be output, followed by a comma, (,) followed by the decoded data. The reader will store the rule and reset, but will not output the Readability Index until the Readability Index Output Enable code is read. The Reader will continue to output the Readability Index upon every read until disabled, either by reset or by reading the Readability Index Output Disable code.

4.3 - Laser Settings

Scan the following codes to turn laser targeting on/off:

On (Default)

M055_01

Off

M054_01

Scan one of the following codes to set the brightness of the CR3 laser.

High (Default)

M058_01

Medium

M057_01

Low

M056_01

4.4 - Reader Power Off Settings

Scan the following codes to set the amount of time before a reader powers off:

1 Hour

M691_02

2 Hours - Default

M688_02

4 Hours

M689_02

Save Settings

M188_02

4.5 - Reader ID and Firmware Version

To find out the Reader ID and firmware version, open a text editor program (i.e., Notepad, Microsoft Word, etc.) and read the following code:

Reader ID and Firmware

M153_01

You will see a text string indicating your firmware version and CR3 ID number (see below):

Xap/iVVVVWWWWXXXXSSSSSSSSSSPXX-XX+XXX

Xap/i - Code Internal ID (not applicable)

VVVV is the application firmware version number

WWWW is the bootloader firmware version number

XXXX is the radio firmware version number

SSSSSSSSSS Reader's serial number (ten digits)

P is "A" if running firmware is the application, "B" if BootLoader

XXX-XX+XX - Internal ID (not applicable)

Example: Xap/i3000300006040010002363A06D-SD+SQ

Note: Code will periodically release new firmware for CR3 readers. For information on latest firmware versions, call Code at (801) 495-2200. To upgrade firmware, please visit our website at **http://www.codecorp.com/codesupport/html** and follow instructions provided.

4.6 - Reader Settings Lock

To lock or unlock the current settings on your reader please scan the codes below:

Reader Settings Locked

M429_01

Reader Settings Unlocked

M428_01

NOTE: Prefix and Suffix programming codes, memory transfer and delete commands, "Clear All CodeXML Rules" and "Suffix -Erase/None"commands are not locked by this feature.

M188_02

Save Settings

4.7 - Lock-out Link Mode

This mode can be used to establish a permanent connection between the reader and a CodeXML modem,

Prepare the reader to communicate in ‘RF Comm Mode’ by scanning the QuickConnect code on the paired modem to which you wish to establish a permanent link. Listen for the single beep to verify the connection acknowledgement. Scan the Lockout Link Mode code (see below). Set appropriate timeout settings, if applicable (see Section 1.6.5).

To reassign a permanent connection to a different reader, scan the unlock link code. Using the ‘new’ reader’ follow the directions outlined in the previous paragraph.

Lockout Link Mode

M710_02

Unlock Link Mode

M711_01

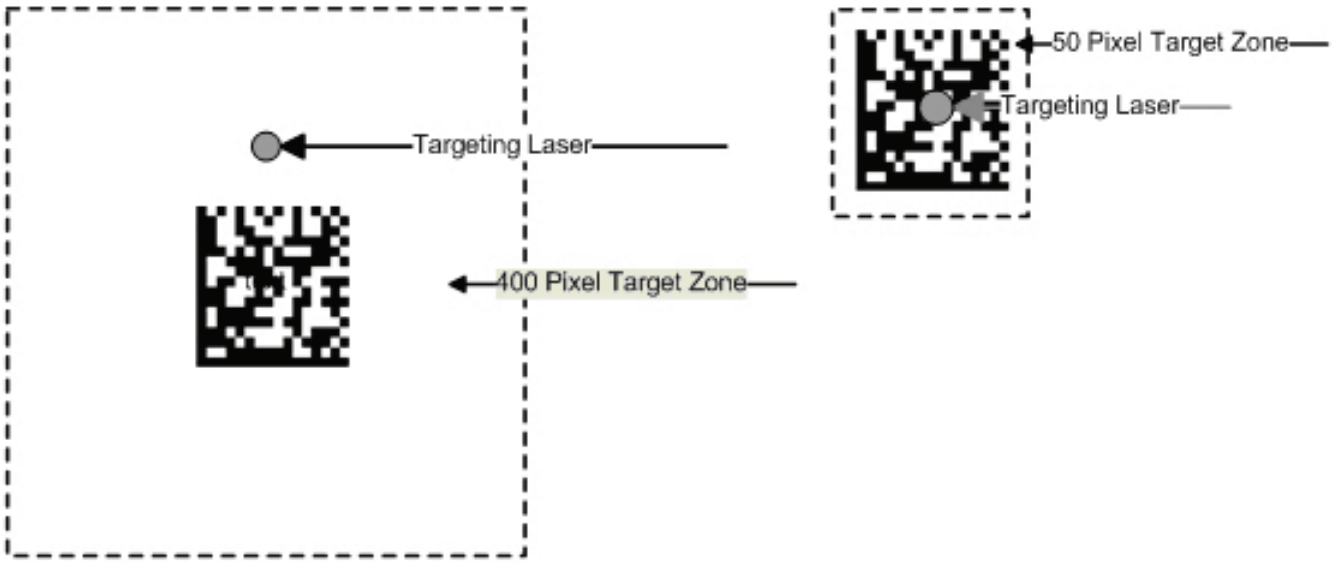
Save Settings

M188_02

Chapter 5 - Advanced Decode Performance

5.1 - Set Targeting Tolerances

The targeting tolerance is the zone around the laser which is eligible for decoding. The values of each of the following codes are the percent tolerance based on the size of the barcode. As the targeting tolerance becomes smaller the targeting laser must be more centered in the symbol being read. Conversely, as the targeting tolerance gets larger there is less precision needed with the targeting laser. If there is more than one decodable code in the field of the, the symbol closest to the targeting laser will be decoded.



50 Most Accurate

M189_01

75

M190_01

100

M191_01

125

M192_01

150

M193_01

200

M195_01

400

M194_01

1600 (Default)

Least Accurate

M196_01

5.2 - Windowing

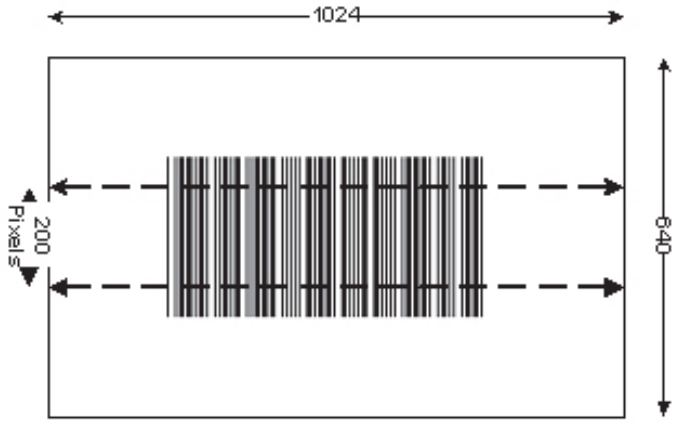
If only one size of bar code is being scanned in an application, the CR3 can be optimized to reduce processing time by adjusting the viewing area within the field of view of the image.

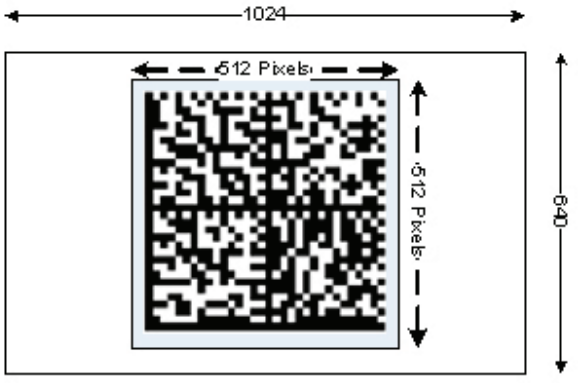
By reducing the vertical window value of the imager to 200 pixels, 1D codes are processed more quickly. Because only a horizontal strip of a 1D code is needed to be decoded, using a narrow strip of the imager is all that is needed. The area above and below the 200 pixels, which is always in the center of the imager, is ignored. This approach reduces the number of pixels that must be processed.

Windowing can also improve the processing time of 2D codes.

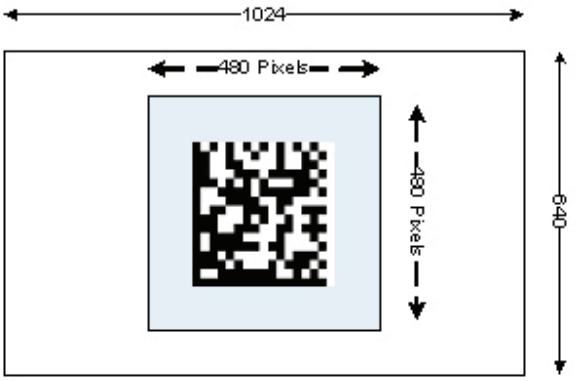
You may negatively impact reader performance if the window size is too small. If it is necessary to have the reader farther away than normal to read the code, the window may be too small.

Reading other types of codes, especially large codes, may be difficult while using this setting.





Medium Code Windowing



Small Code Windowing

Users may optimize the CR3 decode zone if their application only requires one bar code format. If the size and density of the bar codes to be scanned are consistent, please select the setting below that best describes your environment.

1-Dimensional Codes ONLY (1024 x 200 pixels)

M209_01

Caution: It may be more difficult to read other codes while in this setting. You must have the reader farther away than normal.

Small 2-Dimensional Codes (480 x 480 pixels)

M210_01

Medium 2-Dimensional Codes (512 x 512 pixels)

M211_01

Large 2-Dimensional Codes (640 x 640 pixels)

M212_01

Reset to Default Setting (1024 x 640 pixels)

M213_01

5.3 - Mirror Decoding

Scan the following codes to enable/disable the mirroring feature:

On

M182_01

Off (Default)

M181_02

Note: The Mirroring feature allows the CR3 to read codes as they are seen through a mirror (inversed 180°). If the Mirroring feature is enabled, non-mirrored reading ability will be disabled.

M188_02
Save Settings

Chapter 6 - Adding a Prefix or Suffix and Reader Text Commands

6.1 - Prefix Settings

If you scan the following codes, you will lose any unsaved settings. Make sure to save settings on your reader before scanning the prefix codes. If you scan more than one prefix you will receive each scanned prefix in your scanned data; (i.e., if you scan comma prefix twice, you will get two comma prefixes). Scan the following codes to set appropriate prefix:

Prefix - Comma

M159_02

Prefix - Space

M164_02

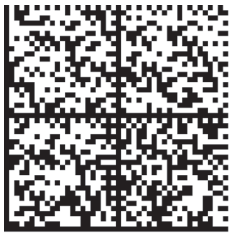
Prefix - Tab (Keyboard Mode)

M166_01

Prefix - Tab (Serial)

M218_02

Prefix - Erase



M404_01

Prefix - Carriage Return Line Feed (Serial)

M214_02

Note: If you require a special configuration, please contact Code at (801) 495-2200 or email appeng@codecorp.com.

6.2 - Suffix Settings

If you scan the following codes, you may lose your current settings. Make sure to save settings on your reader before scanning the Suffix codes. If you scan more than one suffix you will receive each scanned suffix in your scanned data; (i.e., if you scan comma suffix twice, you will get two comma suffixes). Scan the following codes to set appropriate suffix:

Suffix - Carriage Return (Serial)

M168_04

Suffix - Comma

M160_04

Suffix - Line Feed (Serial)

M169_04

Suffix - Carriage Return Line Feed (Serial)

M170_04

Suffix - Space

M165_04

Suffix - Enter (Keyboard Mode)

M161_04

Suffix - Tab (Keyboard Mode)

M167_04

Suffix - Tab (Serial)

M219_04

Suffix - Erase

M405_02

Save Settings

M188_02

6.3 - Erase Prefix and Suffix Settings

Scan the following codes to erase all prefix and suffix data.

Erase Prefix & Suffix Data

M406_02

6.4 - Reader Text Commands

Enabling Reader Text Commands allows the CR3 to accept text commands via RS-232 or RF commmunication. Scan the following codes to enable/disable reader text commands:

Reader Text Commands On

M198_01

Reader Text Commands Off - Default

M197_02

Note: Text commands can only be sent to the reader when it is active. Refer to Reader-Host Interface Control Document for more information.

Chapter 7 - CR3: Maintenance and Troubleshooting

7.1 - Reset Reader to Factory Defaults

Scan the following codes to reset reader:

Reset to USB Factory Default Settings

M049_03

Reset to PS/2 Factory Default Settings

M060_03

Reset to RS-232 Factory Default Settings

M418_02

Reset to RF One Way Factory Default Settings

M684_01

Bootloader Mode

M692_01

Bootloader mode is utilized to download new version of bootloader firmware.

Clear All CodeXML Rules Prefix & Suffix

M052_01

Clear All Stored Data

M071_01

Save Settings

M188_02

7.2 - General Safety Information

Repairs and Adjustments - Only those individuals authorized by Code should attempt to make repairs or adjustments to CR3 equipment. If the reader casing is opened the warranty is voided.

Power Supply - Use only the power supply provided for use with each specific unit when operating Code equipment.

Accessories - Only those accessories approved by Code (see page 3) should be utilized with Code equipment. Non-compliance with any of the above may result in:

- Injury to individuals handling the equipment;
- Damage to the equipment; and
- Voiding of the maintenance contract.

Lasers - The CR3 utilizes a laser **FOR TARGETING PURPOSES ONLY.** If the laser is activated, do not stare into the beam. See pg i for further information regarding laser warnings.

Lithium Ion Battery - Warning: Charge the battery with Code cables ONLY. Do not open battery, dispose of in fire, or short circuit - it may ignite, explode, leak, or get hot causing personal injury.

7.3 - Warranty

Code Corporation's Code Reader 3.0 carries a two year limited warranty as described herein.

Customers may purchase a one or two year extension to this warranty. Please contact a Code representative for more information.

Limited Warranty

Code manufactures its hardware products in accordance with industry-standard practices. Code warrants its products will be free from defects in materials and workmanship, provided that the products are used under normal operating condition intended by the Manufacturer. This warranty is provided to the original owner only and is not transferable to any third party. This warranty is subject to any and all accompanying disclaimers, limitations and other terms of this section.

Terms of Warranty

Code Reader 3.0 readers carry a warranty of two years. Other products with serial numbers, such as but not limited to radios, CodeXML modems, battery chargers, stands and power supplies are warranted for three years from date of shipment. Batteries and battery handles carry a two year warranty, or until battery capacity after recharge is less than sixty percent of new, whichever is shortest. Non-serialized items, such as but not limited to handles and cables, carry a 90-day limited warranty.

Exclusions

No warranty herein contained or set out shall apply to any product (i) which has been repaired, altered or tampered with unless done or approved by Code, (ii) which has not been maintained in accordance with any operating or handling instructions supplied by Code, (iii) which has been subjected to unusual physical or electrical stress, immersion in fluids, puncture, crushing, misuse, abuse, power shortage, improper power supply such as incorrect voltage or wrong polarity, negligence or accident, or (iv) which has been used other than in accordance with the product operating and handling instructions. Preventive maintenance is the responsibility of the customer and is not covered under this warranty.

Warranty Coverage and Procedure

During the warranty period, Code will repair or replace defective products returned to Code's service center in the US. For worldwide warranty service call Code Warranty Support at 1-801-495-2200.

If warranty service is required, Code will issue a Return Material Authorization Number. Products must be shipped in the original or comparable packaging, with shipping and insurance charges prepaid. Code will pay for shipping and insurance of repaired or replacement products worldwide. Code will use new or refurbished parts at its discretion and will own all parts removed from repaired products. Customer will pay for any pre-shipped replacement product in case it does not return the replaced product to Code within 7 days of receipt of the replacement product. The process for return and customer's charges will be in accordance with Code's Exchange Policy in effect at the time of the exchange.

Customer accepts full responsibility for its software and data including the appropriate backup thereof. Repair or replacement of a product during warranty will not extend the original warranty term. Code's Customer Service organization offers an array of service plans, such as on-site, depot, or phone support, that can be implemented to meet customer's special operational requirements and are available at a substantial discount during warranty period.

General

EXCEPT FOR THE WARRANTIES STATED ABOVE, CODE DISCLAIMS ALL WARRANTIES, EXPRESS OR IMPLIED, ON PRODUCTS FURNISHED HEREUNDER, INCLUDING WITHOUT LIMITATION IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE AND NON-INFRINGEMENT. The stated express warranties are in lieu of all obligations or liabilities on part of Code for damages, including without limitation, special, indirect, or consequential damages arising out of or in connection with the use or performance of the product. Seller's liability for damages to buyer or others (regardless of the form of action, whether by contract, warranty, tort, malpractice, and/or otherwise) resulting from the use of any product, shall in no way exceed the purchase price of said product. In no event shall Code be liable for any consequential, special, indirect, incidental or punitive damages, or for any loss of profits, revenue or data, even if Code has been advised of the possibility thereof.

7.4 - CR3 Accessories

Please visit **www.codecorp.com** for more information on Code accessories.

7.5 - Frequently Asked Questions

For a complete list of Frequently Asked Questions, please visit: **http://www.codecorp.com/faq.htm**

7.6 - CR3 Maintenance

The CR3 device operates efficiently and reliably and needs only a minimum of maintenance to operate.
A few tips are given below for maintenance suggestions.

Cleaning the CR3 Window

The CR3 window should be clean to allow the best performance of the device. The window is the clear plastic piece inside the head of the reader. Do not touch the window. Your CR3 uses CMOS technology that is much like a digital camera. A dirty window may stop the CR3 from reading codes.

If the window becomes dirty, clean it with a soft, non-abrasive cloth or a facial tissue (no lotions or additives) that has been moistened with water. A mild detergent may be used to clean the window, but the window should be wiped with a water moistened cloth or tissue after using the detergent.

The CR3 display screen and housing may be cleaned in the same way.

For applications that require cleaning with disinfectant, please use products with the following ingredients:

1) Isopropyl Alcohol
2) Ethyl Alcohol (Denatured Grade)

Code does not recommend using bleach.

Technical Support and Returns

For returns or technical support call Code Technical Support at (801) 495-2200. For all returns Code will issue an RMA number which must be placed on the packing slip when the reader is returned.